

Under the Big Sky

e-Letter

August 2021

National Weather Service

Glasgow, MT



A Peak Inside:

- Meet the Staff...Page 1
- CoCoRaHS/30 Day Summary...Page 2
- Hydro Summary...Page 3
- Past Weather Data...Pages 4-5
- CPC Outlook/Drought Monitor...Page 6
- Climate Highlights/La Niña Watch...Pages 7-8
- Monthly COOP Precipitation...Page 9
- Monthly Trivia...Page 10



Meet the Staff

This month's portrait: Jacob Zanker, Pathways Student Intern at NWS Glasgow

This summer, we had some extra help around the office from a Pathways Student named Jacob, Zanker. Here's a little bit more about him.

1) What have you thought about your summer at NWS Glasgow in Northeast Montana?

All of the staff have been great to work with and I learned about a wide variety of operational tools, especially for severe and fire weather this summer. It is a unique NWS office compared to others I have been at or heard about, one that is definitely in a close relationship with partners and the community. The slower pace of life here fits my personality well. While this summer has been very hot and dry, a couple things I like are the relatively cooler summer nights along with less humidity compared to the Minneapolis area where I am from.

2) Has weather always been interesting to you? What got you started?

Weather has interested me for as long as I can remember. By the time I was in kindergarten, I was drawing up maps and handing out forecasts to neighbors. At the age of 8, a friend helped me create my own weather website that I maintained with daily updates for many years. Some events helped solidify the interest, such as a tornado and snowfall on the same November day in my hometown.

3) Do you have any hobbies or interests you'd like to share?

Several of my favorite hobbies involve the outdoors, unsurprisingly. These include running along with hiking and camping. I enjoy traveling to new places and continue to compete in road races where I can. As far as particular interests with respect to atmospheric sciences, winter weather and climatology top the list.

4) What's something that truly inspires you?

Learning new things from people such as my mentors, then helping inform and educate the public about weather. Any chance to make a positive impact on someone and solve problems inspires me.

5) What's your favorite kind of weather? It's not minus 20, is it?

I would have to say large, fluffy snowflakes falling with a light wind and temperature in the 20s. Otherwise, partly cloudy skies with low humidity and 60s is nice. However, I would much rather it be minus 20 than 100 degrees though.

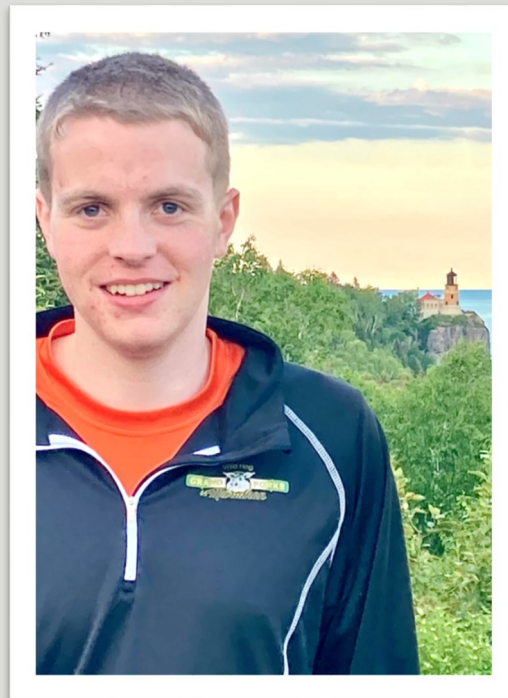


Figure 1: Jacob Zanker, Pathways Student at NWS Glasgow.

Join CoCoRaHS Today!

CoCoRaHS is a grassroots organization with a network of highly committed observers who report daily precipitation such as rain, hail, or snow from all across the country. The data are used by meteorologists, insurance adjusters, mosquito control, and even by those in academia.



Participating in the CoCoRaHS program is a great way to make a difference in your community. Check out the [CoCoRaHS main page](#) to learn more! We are still accepting new observers so feel free to join through the main CoCoRaHS website today. All you'll need is a ruler and a rain gage to get started!

To access some starter training, check out the recent [warm season CoCoRaHS training](#) that was produced by NWS Glasgow for new and interested observers. If you are a current CoCoRaHS observer, this can be a great refresher session!

30 Day Percent of Normal Precipitation (Montana)

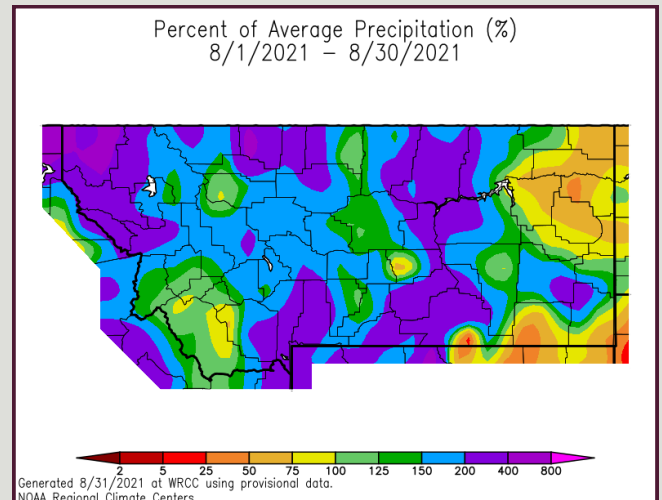


Figure 2: 30-day percent of normal precipitation across Montana.

Avg. Temp Departure from Normal (Montana)

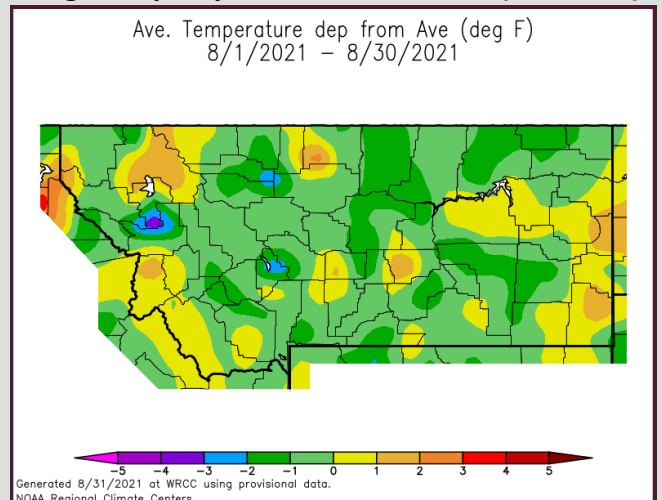


Figure 3: 30-day temperature anomalies across Montana.

Summary: The prior 30 day period brought drier than normal precipitation for much of eastern Montana. However, there were parts of the state, namely in western and central Montana where precipitation trended near to above normal. Wetter than average conditions also spilled into the western portions of the NWS Glasgow County Warning Area, though not enough to alleviate drought concerns. Meanwhile, temperatures over the last 30 days trended within a couple of degrees of normal for most places.

Hydrologic Summary for July 2021, By Greg Forrester, Lead Forecaster at NWS Glasgow:

It was a hot and dry month over Northeast Montana. Glasgow had its second warmest month on record with an average temperature of 79.2 degrees which was 7.2 degrees above normal. The warmest month for Glasgow was July 1936 which averaged 81.2 degrees. Temperatures were 4 to 9 degrees above normal across the region. Some locations had very little precipitation in July. The dry spots were Sidney and Savage with 0.01 inch, Mosby with 0.03 inch, and Brockton 20S with 0.04 inch. The wet spots were White-water with 1.63 inches, Plentywood with 1.24 inches, and Saco and Westby with 1.22 inches. Glasgow received 0.66 inch which was 34 percent of normal.

The dry weather continued to allow extreme drought to expand across the region.

Stream flow on the Milk and Yellowstone Rivers were at or near record lows for most of the month. The Poplar River had below normal stream flow during the entire month. The Missouri River had near normal stream flow for the entire month.

The Fort Peck Reservoir elevation fell to 2230.8 feet during the month. The reservoir was at 76 percent of capacity and 95 percent of the mean pool.

Obtaining Past Weather for Northeast Montana By Ted Jamba, Climate Focal Point

Ever want to look at what the weather was like on a certain day or month in your area?

Retrieving past weather on our website has changed. To do this, go to our Homepage (weather.gov/ggw) then you have to hover over **“Climate and Past Weather”** then select **“Local”**:

The screenshot shows the National Weather Service homepage. The 'CLIMATE AND PAST WEATHER' link is highlighted in the top navigation bar. A dropdown menu is open, showing options: Local (circled in red), National, Drought, NE MT Interactive Climate, Local Climate Graphs, and NE Montana Drought Info. The main content area shows a '5 Day Forecast' for Northeast Montana with high and low temperatures for each day.

Figure 4: How to retrieve past weather.

Then you should get this. We'll then select **“Culbertson”** to see what happened in March of 2018:

The screenshot shows the NOAA Online Weather Data (NOWData) website. The 'Location' dropdown menu is open, and 'Culbertson, MT' is selected (circled in red). The 'Date' field is set to '2018-03' (circled in red). The 'Product' dropdown menu is also open, showing options like 'Daily data for a month', 'Monthly summarized data', etc. The 'View' button is highlighted.

Figure 5: How to retrieve past weather, location, data, and date selection.

Obtaining Past Weather for Northeast Montana (Continued)

By Ted Jamba, Climate Focal Point

When you press the “Go” button, you should get this:

NOWData - NOAA Online Weather Data									
Climatological Data for CULBERTSON, MT - March 2018									
Click column heading to sort ascending, click again to sort descending.									
Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2018-03-01	29	-7	11.0	-12.5	54	0	0.00	0.0	7
2018-03-02	31	13	22.0	-1.9	43	0	0.00	0.0	7
2018-03-03	27	10	18.5	-5.9	46	0	0.00	0.0	7
2018-03-04	34	25	29.5	4.6	35	0	0.16	2.0	8
2018-03-05	31	11	21.0	-4.3	44	0	0.22	6.0	14
2018-03-06	22	12	17.0	-8.8	48	0	0.09	4.0	18
2018-03-07	16	-9	3.5	-22.8	61	0	0.00	0.0	18
2018-03-08	19	-2	8.5	-18.3	56	0	0.00	0.0	17
2018-03-09	36	15	25.5	-1.8	39	0	0.01	0.1	15
2018-03-10	32	12	22.0	-5.8	43	0	0.00	0.0	15
2018-03-11	30	-1	14.5	-13.8	50	0	0.00	0.0	15
2018-03-12	31	-3	14.0	-14.9	51	0	0.00	0.0	14
2018-03-13	41	2	21.5	-7.9	43	0	0.00	0.0	13
2018-03-14	41	5	23.0	-6.9	42	0	0.00	0.0	12
2018-03-15	37	19	28.0	-2.4	37	0	0.00	0.0	12
2018-03-16	35	M	M	M	M	M	0.00	0.0	11
2018-03-17	36	22	29.0	-2.5	36	0	T	T	11
2018-03-18	33	M	M	M	M	M	0.00	0.0	10
2018-03-19	37	29	33.0	0.5	32	0	T	T	9
2018-03-20	37	26	31.5	-1.5	33	0	T	T	8
2018-03-21	38	13	25.5	-8.0	39	0	0.00	0.0	7
2018-03-22	40	18	29.0	-5.1	36	0	0.00	0.0	5
2018-03-23	34	31	32.5	-2.1	32	0	0.20	2.0	7

Figure 6: Sample of “past weather” from NWS Glasgow webpage.

Notice anything March 4-6? (e.g., snow storm!)

For further information on this new feature, check out [this video](#).

CPC Three Month Outlook:

The Climate Prediction Center released an update of its three month outlook for temperature and precipitation for September through November back on August 19, 2021. The outlook shows warmer than average temperatures are favored for southern Montana during the period, with equal chances for normal, below normal, or above normal temperatures to the north. Precipitation, meanwhile, is likely to trend below normal into the fall months.

The latest outlook in full detail is always available [here](#). In addition, you can check out the Climate Prediction Center [Interactive site](#)! You can zoom in on our area, and navigate to see the climate outlook for your specific location. The pie charts on the left hand side can be particularly useful for assessing the outlook at your specific location.

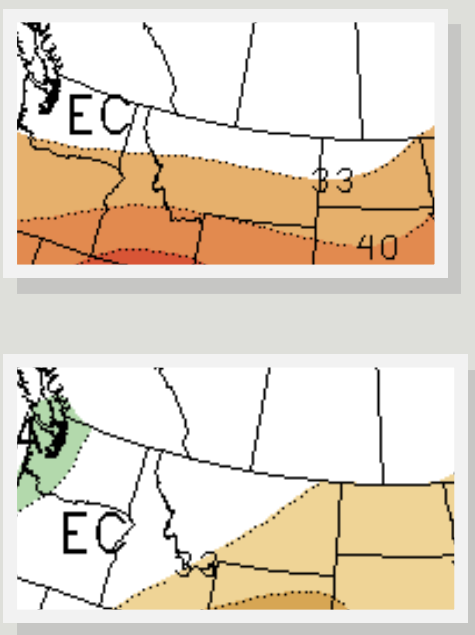


Figure 7: Climate Prediction Center three month temperature (top) and precipitation (bottom) outlook for September 2021 through November 2021.

U.S. Drought Monitor:

The latest U.S. Drought Monitor was released on Thursday September 2, 2021. Most of NE Montana remains under the grip of an extreme to exceptional drought. Recent rainfall has done very little to abate the drought conditions. This outlook is updated weekly. Please feel free to check out the latest [here](#).

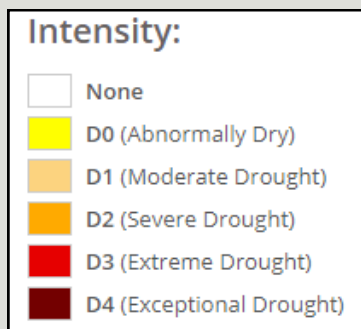
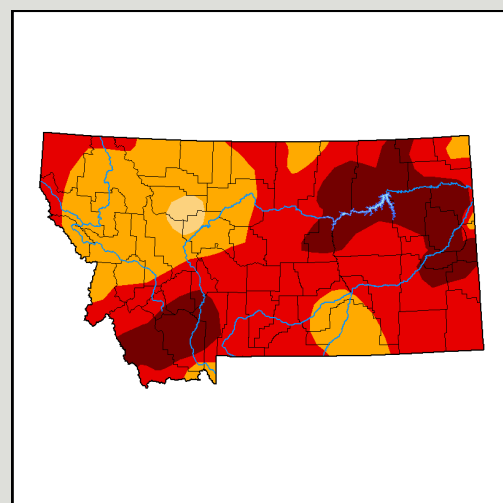
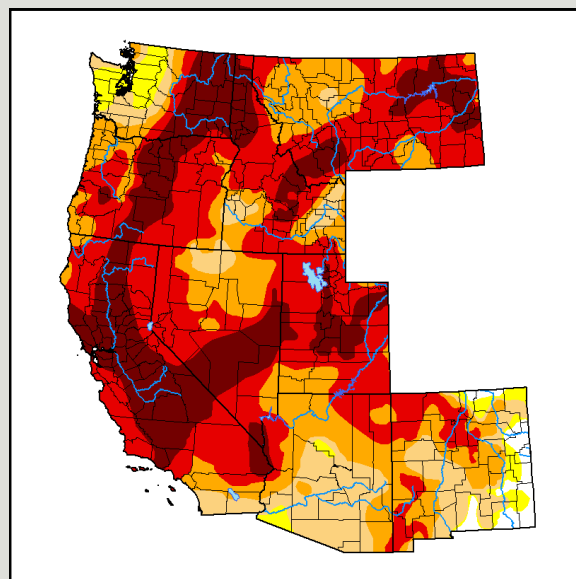


Figure 8: U.S. Drought Monitor updated September 2, 2021

U.S. & Global Climate Highlights (July): The [U.S.](#) & [Global](#) climate highlights for July 2021 have been released, the latest month for which data was available. A few points for you to take home are provided below.

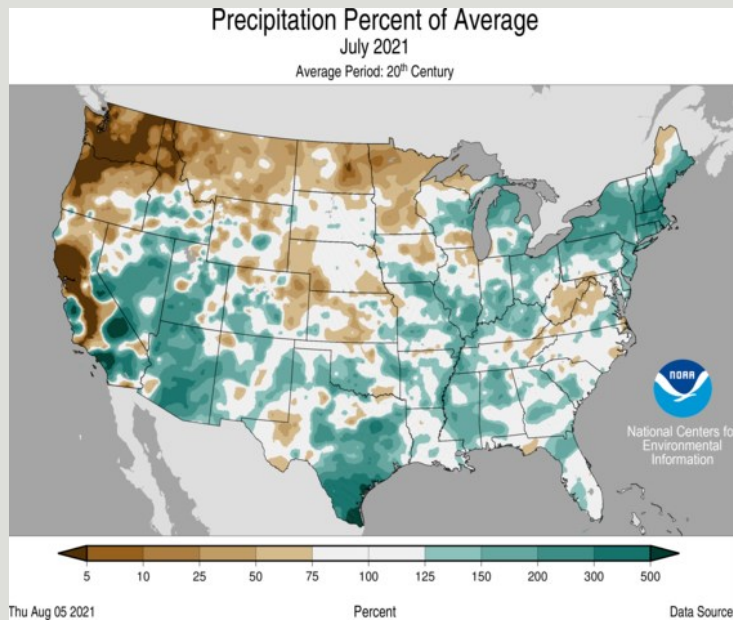


Figure 9: July 2021 Percent of Average Precipitation (U.S.).

U.S. Highlights for July 2021

- 1) The contiguous U.S. average temperature for July 2021 was 75.6 °F, tying 1954 and 2003 for the 13th warmest ever.
- 2) The average July precipitation total for the contiguous U.S. came in at 3.36 inches. This ranks is exactly average.

Global Highlights for July 2021

- 1) The 2021 global land and ocean July surface temperature was the hottest on record.
- 2) The land surface temperature for July 2021 was the warmest ever recorded.
- 3) Precipitation anomalies varied considerably around the world in July 2021, which is fairly typical.

La Niña Watch

It is growing increasingly likely that La Niña will develop in the fall months. What does that mean for winter? Below is the typical pattern observed, but keep in mind that it does vary from year to year, and just because that's what can happen during a "typical" La Niña, that doesn't mean it is destined to happen this time (See more on La Niña on next page).

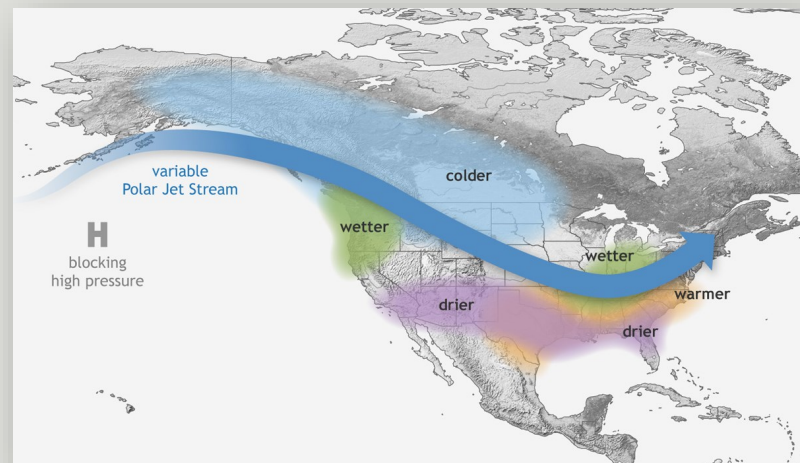


Figure 10: Typical La Niña winter time pattern from Climate.gov.

Links You May Like:

[ENSO Update](#)

[La Niña Watch](#)

[July 2021 Record Hot](#)

[North American Monsoon](#)

More on La Niña

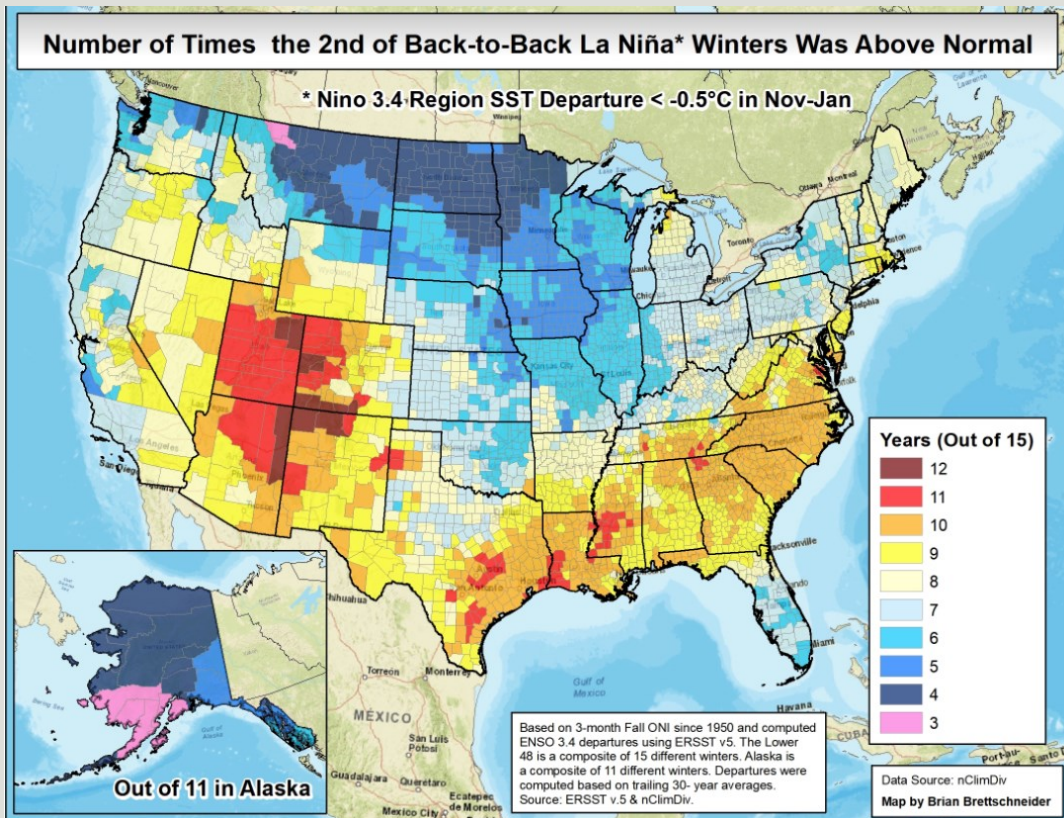


Figure 11: Frequency that 2nd of Back to Back La Niña winters was warmer than normal, by Brian Brettschneider, Climatologist at the University of Alaska.

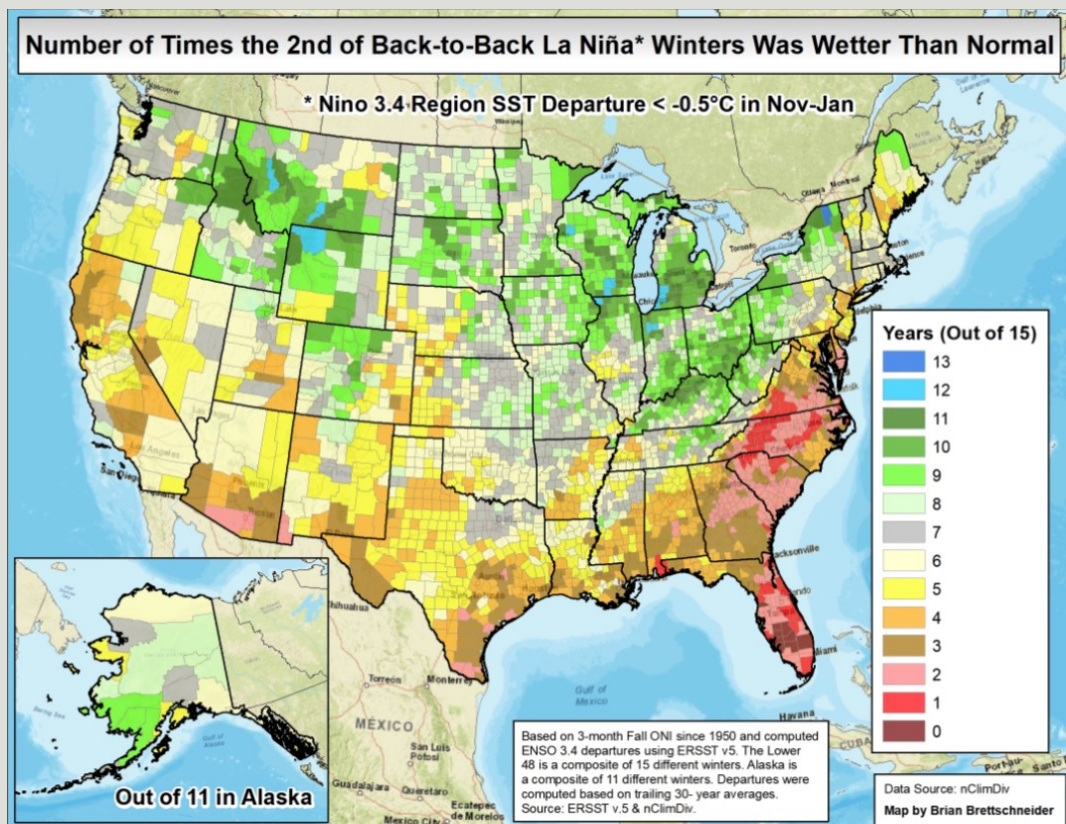


Figure 12: Frequency that 2nd of Back to Back La Niña winters was wetter than normal, by Brian Brettschneider, Climatologist at the University of Alaska.

COOP Precipitation Data (*Preliminary* July 2021)

Station	Precipitation	Location
BAYM8	0.64	Baylor
BRDM8	0.58	Bredette
BTNM8	M	Brockton 17 N
BKNM8	0.04	Brockton 20 S
BKYM8	0.09	Brockway 3 WSW
BRSM8	1.16	Brusette
CLLM8	1.08	Carlyle 13 NW
CIRM8	0.12	Circle
CHNM8	0.79	Cohagen
COM8	M	Cohagen 22 SE
CNTM8	0.17	Content 3 SSE
CULM8	0.32	Culbertson
DSNM8	1.22	Dodson 11 N
FLTM8	0.49	Flatwillow 4 ENE
FPKM8	0.70	Fort Peck PP
GLAM8	0.83	Glasgow 14 NW
GGWM8	0.66	Glasgow WFO
GGSM8	0.42	Glasgow 46 SW
GNDM8	1.12	Glendive WTP
HRBM8	M	Harb
HINM8	0.75	Hinsdale 4 SW
HNSM8	0.43	Hinsdale 21 SW
HOMM8	0.75	Homestead 5 SE
HOYM8	0.64	Hoyt
JORM8	M	Jordan
LNDM8	0.19	Lindsay
MLAM8	0.15	Malta
MLTM8	0.50	Malta 7 E
MTAM8	1.13	Malta 35 S

Station	Precipitation	Location
MDCM8	0.93	Medicine Lake 3 SE
MLDM8	0.59	Mildred 5 N
MSBM8	0.03	Mosby 4 ENE
OPNM8	0.57	Opheim 10 N
OPMM8	0.79	Opheim 12 SSE
PTYM8	1.24	Plentywood
PTWM8	1.61	Plentywood 1 NE
POGM8	0.97	Port of Morgan
RAYM8	1.16	Raymond Border Station
SAOM8	1.22	Saco 1 NNW
SMIM8	0.18	St. Marie
SAVM8	0.01	Savage
SCOM8	0.59	Scobey 4 NW
SDYM8	0.01	Sidney
SIDM8	0.50	Sidney 2S
TERM8	0.33	Terry
TYNM8	M	Terry 21 NNW
VIDM8	0.11	Vida 6 NE
WSBM8	1.22	Westby
WTRM8	1.63	Whitewater
WHIM8	M	Whitewater 18 NE
WBXM8	0.22	Wibaux 2 E
WTTM8	M	Winnett
WNEM8	0.32	Winnett 6 NNE
WNTM8	0.95	Winnett 8 ESE
WITM8	0.40	Winnett 12 SW
WLFM8	1.00	Wolf Point
ZRTM8	0.35	Zortman

Monthly Trivia:

Last time we asked...

What is density altitude and what is its importance to our partners in aviation?

Answer: Density altitude is used in aviation to assess an aircraft's aerodynamic performance within a range of particular weather conditions. On a very warm and humid afternoon air becomes less dense, and so the air's density at a pilot's given location is equivalent to a higher altitude in standard atmospheric conditions, which is where a term high density altitude comes from. High density altitude can lead to hazards such as reduced power, thrust, and lift, a smaller rate of climb, among other impacts. In fact, high density altitude is responsible for 7.3% of all U.S. aviation accidents that are weather related. The National Weather Service office in Seattle, WA has a nice explanation of density altitude, high density altitude, impacts to aviation, and more, [here](#).

? New Question: August is now in the rear view mirror. That means fall is coming and with it, cooler temperatures. This month we ask—what is the earliest date Glasgow, MT had a low of 32 °F?

August 2021 Summary

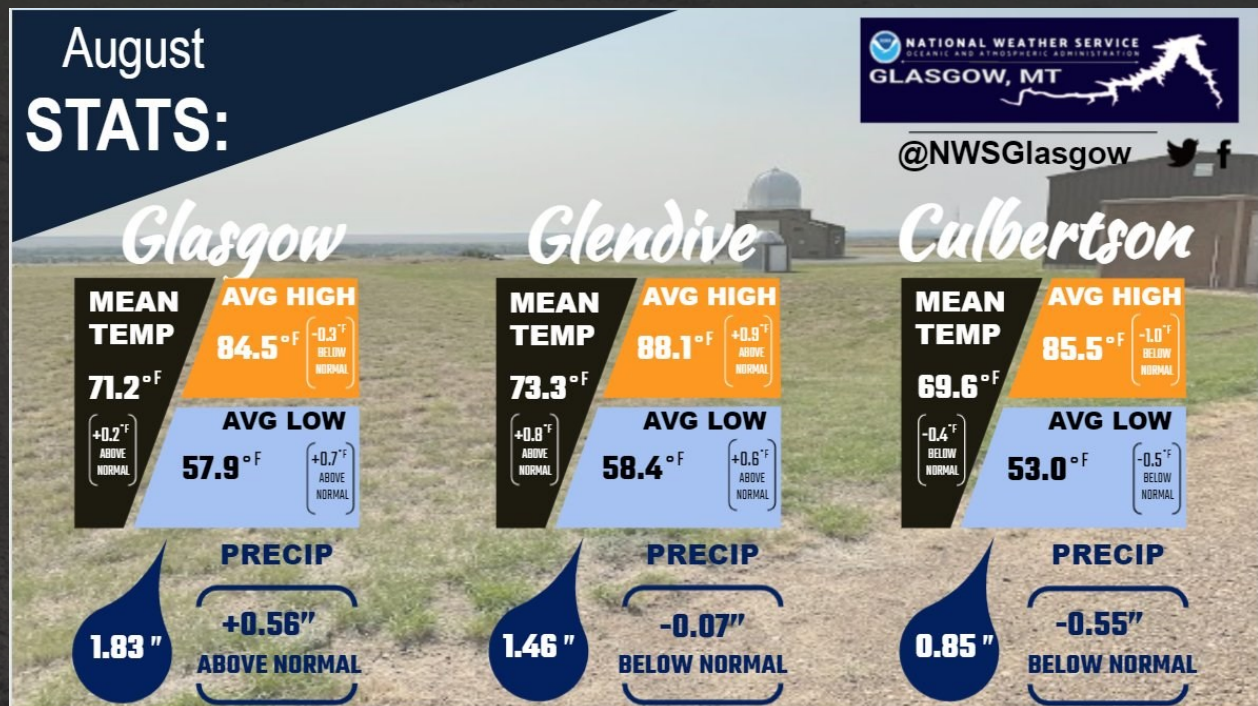


Figure 13: Social media graphic shared by NWS Glasgow showing how August 2021 stacked up.

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